Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

EMPIRICISM AND COMMON LOGIC.

By John Watson.

The aim of a philosophy being to give a full and self-consistent explanation of knowledge, its value may be exactly estimated by its freedom from the presuppositions and inconsistencies of ordinary thinking. The impulse to know necessarily precedes any doubt of the attainability of knowledge, or any analysis of the grounds on which it rests. The unreflecting observer, whose only speculative notions are those that have nourished his mind as unconsciously as food and air have helped to build up his body, can only by an effort comprehend that facts, apparently simple and self-evident, need for their ultimate justification to be brought to the test of philosophical criticism. Least of all has he any tendency to suspect the truth of those beliefs, that concern the nature of the common world of sense, which seems simply to copy itself in the passive mirror of his own consciousness. That there exists, apart in itself, and just as he perceives it, a world of realities, that was before any mind was there to know it. and would be if every mind were annihilated, he does not once begin to doubt. The elements of which this really complex conception is the product were never consciously distinguished, and are now so completely fused together as to seem an indissoluble unity. Hence, when philosophy seeks to resolve knowledge into its primal constituents, the preconceptions of common sense, from which it must needs start, offer a stubborn resistance to the successful completion of the task. To a failure to overcome this hindrance to a thorough analysis and reconstruction of knowledge, the philosophical theory known as Empiricism owes its origin.

The first and crudest form of Empiricism simply formulates what is most obviously in every one's consciousness, maintaining that all real knowledge is of individual things, as manifoldly qualified and self-existent, i. e. as unrelated either to consciousness or to each other. These objects are supposed to be passively apprehended by sense, in their integrity and isolation, without any exercise of thought. A distinction, indeed, is usually made between secondary qualities of body, which are only affections of the sensitive organism, and primary qualities, which have an extra-organic existence; but this in no way affects the fundamental position, that objects exist as they are known, and are known as they exist.

As things with the full complement of attributes that make up their reality, are thus given ready-made to sense, thought is necessarily conceived as purely formal in its activity. Incapable of originating anything, it can only compare one object with another, detach resembling qualities and recombine them after a fashion of its own. In this way general conceptions are formed, which only differ from the real things they are abstracted from in the possession of fewer attributes and in the arbitrariness of their unity. In the language of Locke, "general and universal belong not to the real existence of things, but are the inventions and creatures of the understanding." Hence an abrupt contrast of sense and thought, things and conceptions. To think is to relate, and relation destroys the individuality of objects, putting asunder what nature has joined together. Knowledge, it would seem, takes place only when the mind passively reflects the world; it is adequate when, undisturbed by the "inventions" of the understanding, it reflects that world fully. It follows that we must think in a different way from what we know, and that the understanding can only produce an illusion of knowledge. If the preservation of reality depends upon the exclusion of relation, the only thing left for thought to do is to convert reality into fiction.

This theory commends itself to an ordinary way of thinking, and seems to account for knowledge simply and naturally. True as it seems, however, it is at once superficial and self-contradictory. Its validity depends upon the possibility of keeping intact the isolation of individual objects, for once bring them into relation and they will be infected with the taint of thought. Can the antithesis of things and thoughts, implied in such an isolation, be consistently maintained? If an object, as a complex of qualities, is given to sense apart from relation, it must be known in a simple and momentary act of consciousness; for, were a separate sensation needed for the knowledge of each of its several qualities, a series of relations would be required to combine these qualities into a unity, and the opposition of thing and thought would be destroyed. On the other hand, what are the properties of an object but the sum of its relations to other objects? I can only think of a quality as at once the quality of a thing and as distinguished from, and therefore related to, other qualities of a like kind. "Determination by negation" is the condition of any knowledge whatever of a thing as qualified, and what is so determined is brought into relation with other things. To think of

"gold" as "yellow," implies a comparison of the sensation by which the quality is known with other sensations of color to which it is negatively related, and, more obviously, the quality of ductility or solubility involves a series of relations to other things. The knowledge of each of the qualities that together make up the object, implies a relation to other objects as qualified. And not only is each of the qualities of a thing determined by its relation to the qualities of other things, but all the qualities that belong to the same thing are determined, by successive judgments, as related to each other. When one property has been judged to belong to a thing, it is conceived as attaching naturally to that thing and forming an integral part of it, and thus a fresh determination of the partially qualified object becomes possible. It is again brought into relation with other objects, and a property, different in kind from that already known, is added. Thus I judge that the object called "gold," which I already know to be "yellow," is also "soluble in aqua regia." In this way, by being successively brought into relation with other things, a thing multiplies in attributes exactly as knowledge concerning it increases. But if so, what becomes of the assumed opposition between thought and reality? Either the real existence of the individual does not depend upon its being completely qualified, or reality is constituted by relations of thought. To accept the latter alternative is to abandon the fundamental position of Empiricism; and hence, still grasping at the antithesis of nature and thought, its advocates try to preserve the reality of knowledge by maintaining that, while sensation does not reveal a variously qualified object, it makes known a quality in its singleness. For the individual, in other words, is substituted the particular; for isolated things, isolated qualities of things. Thought is still regarded as inadequate to a knowledge of the real, from its incompetence to apprehend objects in their unrelated simplicity, but its domain is vastly enlarged, and its method of procedure reversed. Whatever complexity may be shown to attach to knowledge is referred to the inventive activity of the understanding; and, as complexity can only result from the putting together of simple elements, thinking is now regarded as a gradual process of complication, and not, as formerly, of abstraction, or at least of the former as the condition of the latter. Does this revisal of Empiricism successfully avoid the introduction of relativity into the knowledge of real existence?

A negative answer to this question has already been given by implication. The knowledge of a single quality involves relations of thought not less than the knowledge of a multiplicity of qualities. By identifying a momentary sensation with the quality of a thing which is not momentary but permanent, something unaffected by illusion seems to be obtained. This seeming exclusion of illusion, however, is itself illusive. Just because a sensation is in itself simple and individual, and therefore free from relation, it cannot be identified with the quality of a thing which is neither simple nor individual. The latter is a registered result of a series of comparisons between like sensations, and therefore is overlaid by the invention of the understanding. Only as arrested in the moment of its disappearance from consciousness by something other than itself, and fixed by relation to other sensations, whose mere individuality is likewise converted into universality, does a sensation become representative of the quality of a thing. Quality is meaningless except as relative to a substance which it qualifies, i. e., to something which remains identical with itself through a multiplicity of times. Nothing less than this is involved in the distinction of reality and fiction. But as sensation cannot survive the moment of its origination without distinguishing itself as existing at one moment from itself as existing at a different moment, and such distinction involves relation to something that does not pass away. Nor can a sensation be identical with itself, for successive sensations, while they may be similar, cannot be the same. Thus the contradiction implicit in the opposition of thought and reality once more emerges, and again forces upon us the alternative of giving up the knowledge of the real, or of admitting the originative activity of thought. The attempt to exclude thought from the construction of reality has already compelled the Empiricist to attenuate real knowledge to the reception of single qualities in their isolation; and now, still refusing to adopt the only way of escape that will at once break down the false antithesis of thought and knowledge, and at the same time account for real existence, he clings to the reality of mere sensation rather than surrender his belief in the passivity of the mind. It may be impossible, as it is, to apprehend a complex of qualities, or even a single quality, in a momentary act of consciousness; as it may, and must be admitted that there is no external object, independent of consciousness; but at least the reality of sensation, which cannot be infected

with relations of thought, is indubitable. This is the attitude of the Empiricist, as at last brought to bay. The realm of illusion has now encroached so far upon the world of reality as to threaten completely to submerge it, and the only defence against the advancing tide of scepticism is the thin barrier of individual sensation. That gone, the only way in which the domain of real knowledge can be retained must be by a complete change of method. Meantime, what has to be explained is not the knowledge of a real world, existing apart in itself, but the fiction by which we come to imagine that there is such a world.

The two forms of the Empirical hypothesis now considered, which are not only diverse but contradictory—the one maintaining that knowledge begins where, according to the other, it ends —are not to be found anywhere stated with that explicitness which at once manifests their inherent opposition. But, by stripping off the disguise of ambiguous language and misleading associations, they may be discerned, lying side by side in contrasting juxtaposition, in the pages of Locke, of the Scottish Realists, and, generally, of all Empiricists. This, indeed, is inevitable; for the dialectic which transforms the uncritical assumption of a self-dependent world into its opposite, is continually repeated in the arena of ordinary consciousness itself. The one position to which common sense remains true is that the mind is passively receptive of reality, and that objects are given in an instantaneous act of consciousness. But while, in the main, what is apprehended seems to be the manifoldly qualified individual, there are cases in which qualities are apparently given singly, as when an odor or taste is felt for the first time, a sound newly heard, or a sudden change of color perceived. Formulated, the seeming difference of complexity in the content of sensation comes forth as the two theories of knowledge, whose incompatibility has just been shown. Moreover, common sense, in holding, as it certainly does in an unconscious way, that the test of reality is the immediateness of sensation, virtually surrenders the test of reality as determined by the independence of a material object—the stage at which we have now arrived in our criticism of Empiricism.

This new simplification of Empiricism has been already refuted by anticipation. Nothing of the original theory remains except the antithesis of sensation as real, and thought as fictitious, but even this modest claim to reality cannot be consistently maintained. The workmanship of the mind will manifest itself in the

very rudiments of knowledge, and force the admission of the constructive activity of thought. Not even the mere individuality of sensation can substantiate its plea for exemption from the inventions of the understanding. An isolated sensation cannot be real, because, as indeterminate, it is mere zero. To be in consciousness at all, it must be related to other sensations, to which it is at once like and unlike. Mere sensation cannot account for the appearance of knowledge, not to speak of reality, for in itself it is nothing. This objection cannot be met, it can only be disguised. The individual sensation must be complicated with the constructions of thought, under shelter of ambiguous phraseology, in order that its seeming independence of thought may be plausibly preserved. This is the cue of Berkeley and Hume, as of all their followers. The sleight of hand by which the mystification is effected is a dexterous use of such expressions as "natural relations," and "association of ideas," which cover, but do not dispense with, the creative activity of thought. It is by surreptitiously investing sensation with relations of thought, while seeming to extract them from it in its simplicity, that Mr. Mill gives plausibility to his "psychological theory of the belief in an external world." He "postulates" the "laws of association," which, as sensations do associate themselves, is tacitly to assume at the outset the manifold relations which only thought can constitute. Following Hume, he starts with the "law" that "similar phenomena tend to be thought of together," i. e., with association in the way of resemblance. Assuming that "phenomena" here means feelings, as it should in a theory which feigns to derive the conception of matter from sensation, as originally given or as reproduced, the law must be interpreted to signify that those sensations which have a natural affinity for each other tend to coalesce and form groups. This clearly implies that one sensation compares itself with another, and, observing the likeness and unlikeness that subsists between them, attaches itself to the other in virtue of their mutual likeness. This, however, is not to derive knowledge from simple sensations, but to destroy their simplicity by investing them with the faculty of comparison, distinction, and identification. If a sensation is competent to perform this act of relation, it is competent to perform any act of relation, however complex. Grant that the sensation "white" may distinguish itself from, and relate itself to, the sensation "red," and we cannot deny that it may equally

retain and compare itself successively with any indefinite number of sensations, until it has compassed a knowledge of the whole universe. In assuming that a sensation carries with it relations to other sensations, we assume what is true not of sensation in itself, but only of the mind as conscious of sensation. Association by resemblance involves the presence of a permanent factor to serve as a bond of connection between fleeting impressions, taking them out of their isolation and relating them to each other, and such a permanent factor can be found in thought alone. It is true that thought does not separately apprehend sensations, and afterward compare and relate them. The relation is given in the consciousness of each, but not the less is the active presence of thought implied; for were there no unifying activity, even the meagre amount of relation required for the consciousness of two sensations in one act would be impossible. To be consistent in excluding the constitutive action of thought, even the seemingly trifling admission that an individual sensation may in itself resemble another sensation cannot be allowed. The admission, however, is not trifling; for, once allow that sensation may perform any act of relation whatever, and no limit can be set to its relating activity. We have but to take association by resemblance to cover association in the way of succession and co-existence, and the belief in an external world follows as a matter of course. The permanence and self-dependence of things, which is what mainly distinguishes them from our subjective states, is tacitly assumed when, under the disguise of association by resemblance, a self in permanent relation to sensation is quickly substituted for sensation in its mere individuality. By its power of universalizing the particular, thought, if granted sensations to begin with, will rear the whole fabric of knowledge. This is the secret of the plausibility of Mr. Mill's reduction of the belief in matter to mere feeling. The laws of association that he postulates at the start, implicitly contain the manifold relations by which knowledge, as it is to a rational being, is constituted. Any one of a group of resembling sensations (in the wide meaning of resemblance above mentioned) instantaneously suggests all the others that, by frequent repetition, have become inseparably associated with it; and, uniformity of association being inevitably confounded with objective connection, permanent possibilities of sensation come at length to appear self-identical and independent of the sensations from which they were

generated. Now, if for "permanent possibilities of sensation" we substitute "permanent relations of thought to sensation," this account of the origin of real knowledge will be fairly accurate, although to do so is not to correct but completely to change the theory. It is, roughly speaking, by a comparison of resembling sensations, i. e., sensations that are at once like and unlike, that that "determination by negation" which is the condition of knowledge, is carried on. But thus to compare and distinguish is not passively to apprehend impressions, but to substantiate them by relations that only thought can constitute. Thus the so-called "laws" of association are seen to be the bringing of the particular under categories. The minimum of knowledge is the judgment "something is here," and "something" is implicitly a "permanent possibility of sensations," because, being the reflex of a permanent self, it is a completely qualified thing in potentiality. Unlike a sensation, it does not pass away with the moment of its appearance, but remains identical with itself. At each fresh stage in the development of thought a more concrete category comes into play, and the goal of perfected knowledge is the thing in the fullness of its relations. But if this is a true account of knowledge, the only thing that can, with absolute truth, be called a "permanent possibility of sensations" is thought itself. Things are so named only in the secondary sense of deriving their permanence from the unifying action of thought. As permanent they are the universalizations of the individual through the particular, as thought is the individualization of the particular through its own universality. Thus substances lose that aspect of hard and rigid isolation which they present to the eye of sense, and become instinct with the life of thought. They are seen to be constituted by a universe of relations, of which self-consciousness is at once the centre and the circumference, the beginning and the end, and to manifest the self-development of an eternal and immortal spirit. The relative positions of thought and nature thus change places. Starting with the familiar opposition of sense and thought, things and conceptions, we have found that, by simply forcing Empiricism to account for itself, one portion of the domain of nature after another has to be given up, until at last there is none that has not come under the sway of thought. When even the individuality of sensation has been wrested from the grasp of the Empiricist, his last hold upon reality is loosened, and with it the possibility of accounting

for even the appearance of knowledge; from all of which we learn the lesson that there is no sure halting-place short of an absolute idealism that recognizes the rationality of the real and the reality of the rational.

The impotence of Empiricism to account for knowledge, or even the illusion of knowledge, having been proved, there can be no great difficulty in showing the futility of common logic, as an explanation of the powers of thought. Formulating the preconceptions of common sense, Empiricism gives two mutually contradictory theories of knowledge; maintaining, on the one hand, that the individual thing, as a complex of attributes, is given ready-made to consciousness, and on the other hand that the real as presented is the mere individual. From these opposite views have grown up the two forms of the logic of common sense—syllogistic or deductive logic, corresponding to the form, and applied or inductive logic, based upon the latter—which are really contradictory of each other, with whatever plausibility they may be reconciled.

Syllogistic logic, as its origin necessitates, is nominalism. The concrete thing being assumed to be given, as concrete, to start with, apart from any activity of thought, the only thing left for thought to do is to recombine in an arbitrary manner the attributes it has stripped off. At each stage in the process, thought is going farther away from reality, and when it has reached the goal of its efforts it has succeeded so well that all determination has been removed, and nothing remains but a contentless abstraction. This is the theory of generalization upon which the syllogism is based, and hence reasoning is supposed to be the inverse process of gradually adding on the attributes that have been taken away, until the concrete object, with which thought is supposed to begin, is again reached.

A general conception, according to this account, must be related to reality as its negation. Thus an uncompromising opposition is set up between the world of things and the world of thought. Conceptions, indeed, are said to coincide with things, but only in the sense that their content, being partially identical with the attributes of objects—it can never be completely identical—is not positively contradictory of them. The only reality, therefore, that can be predicated of conceptions, as conceptions, is the meaning of the names by which they are expressed. If this is a correct account of the powers of thought, it follows that

thinking consists, not in the knowledge of reality, but in gradually receding from reality, and that thought will be most perfect when knowledge has been reduced to the unthinkable abstraction of "pure being." This result is simply the logical complement of that reduction of knowledge to the mere individuality of sensation, which is the outcome of Empiricism as a psychological theory; for an individual sensation, as indeterminate, is simply the abstraction of relation to consciousness, and therefore identical with the category of "being." Nor, again, is it possible to add the smallest item to the knowledge we are assumed to start with, for to think is to abstract, and thus to take from the store of knowledge we already possess, not to increase it. Thought is therefore tied down to the analysis of the meaning of names, and the explicit declaration of that meaning in propositions or syllogisms. There is no way of escape from this conclusion, so long as real objects are assumed to be given to consciousness without any exercise of thought. What is called conceptualism is but a less consistent nominalism. To say, as the conceptualists do, that conceptions are as real as the things of which they are more or less meagre outlines, is as contradictory as to maintain that the reflection of an object is real in the same sense as the object itself. As the only reality that can be ascribed to an image as such is borrowed from what it represents. So the only reality of a conception is its relation to things, i. e., the signification of its name. At the most, a conception can only be a greater or less approximation to reality. It is not pretended that the processes of abstraction and generalization in any way affect the real existence of objects, and hence thought must be nearest to real knowledge when it is least exercised. Even the minimum of abstraction, the elimination of the particular place and time in which the individual is presented in perception, must falsify real existence to that extent, as the maximum must completely destroy it. A general conception is admittedly thinkable only through its relations to individuals, which just means that to have real knowledge we must go back to the completely qualified object from which we set out; and this is nominalism.

Refusing, as we must, to accept the conceptualistic correction of nominalism, it follows that no general proposition is adequate to the expression of reality. In every such proposition the subject is a general conception, and therefore the recorded result of a greater or less remove from reality. All conceptions being

formed by a process of abstraction, their connotation is necessarily less than that of the concrete thing from which they are abstracted; and, as thought can originate nothing of itself, judgment can only consist in stating explicitly the attributes which are implicit in conception, i. e., in evolving the meaning of a name. Hence all general propositions at least must be merely verbal. A judgment is simply the analysis of the meaning of a conception already known, and the form of predication an index that such an analysis has been made. In a general proposition there is less expressed in the predicate than is implied in the subject, it being merely affirmed that a given conception contains a certain attribute or attributes among others. Thus, in the proposition "gold is a metal," it is asserted that of the totality of attributes signified by the name "gold," those attributes connoted by the term "metal" form a part. A judgment, on this theory, is not a way of attaining to real knowledge, but a way of getting away from it. It indicates a further advance than conception in that process of abstraction which only ends with the disappearance of the last vestige of reality. One result of this falsification of the process of thought is the impossibility of the science of nature. No aggregation of singular propositions is competent to the expression of a law of nature; for this only a general proposition will serve, and such a proposition, as it seems, is inadequate to express real knowledge. Do we, then, reach a more satisfactory result by limiting ourselves to singular propositions? No, for any predication whatever implies an act of abstraction, and therefore destroys reality. If, in the proposition, "this rose is red," we suppose the subject to refer to a concrete object existing here and now, the predicate expresses the abstraction of the attribute "red" from the complex of attributes given, and therefore converts reality into illusion. The only way, it would appear, in which the reality of things may be preserved is not to judge of them at all; which just means that, thought being impossible without relation, nothing real can be thought. It is hardly necessary to point out that, as the individual cannot be judged of without losing its reality, so neither can it be known, since knowledge implies judgment. But if so, not even the precarious footing that science may seem to have in the singular proposition can be maintained, since a singular is no more competent than a general proposition to express anything real. These results cannot be avoided by changing our point of view from

the connotation to the denotation of terms. This alteration simply makes the futility of syllogistic logic as an account of the process of knowing, more obvious. If the relation expressed by a proposition is that of a part to a whole of extension, the predicate merely states that of a certain number of individuals indicated by a class, the fewer number of individuals expressed by the subject are a part. If the proposition "gold is a metal," means, as is implied in the theory of conversion, that the individuals named "gold" are some of the aggregate of individuals called "metals," evidently we are simply repeating what we are already supposed to know, without advancing a single step. And if we accept the doctrine of "the qualification of the predicate" and its consequences, it is not less evident that, as the individuals composing the class "metals," to which the predicate refers, can only be those which are indicated by the subject, viz: those composing the species "gold," the proposition is but the identical one, "gold is gold," and an identical proposition is merely verbal. This is what is implied in setting up the "law of identity" as the supreme canon of affirmative propositions; for the formula A is A, is, like the category of "being," the mere abstraction of relation to consciousness, and only affirms that what is in consciousness is in consciousness.

After what has been said as to the relation of conceptions and propositions, few words are needed to dispose of the syllogism. As the proposition is a more decided departure from reality than the conception, so the syllogism carries the process of abstraction still further. Having reduced the number of attributes of a conception by predication, the syllogism reduces the attributes thus obtained by a new predication. Thus, to retain our former example, the totality of attributes signified by the name "gold" being limited to those connoted by the term "metal," a further limitation is effected by predicating "substance" of "metal," which gives a syllogism in the fourth figure:

Gold is a metal.
A metal is a substance.
Therefore gold is a substance,

in which the conclusion expresses a more advanced stage of retrogression from reality than either of the premises, being in fact simply the subject of the major premise after abstraction has been made from all attributes except those connoted by the term "substance." There is here no real inference, no advance from

the "known to the unknown," but a mere change of name in conformity with a changed point of view. Hence there is no adequate reason for restricting formal reasoning to three terms and three propositions; an indefinite number of terms and propositions may be linked together by simply carrying on the process of abstraction until, by successive acts, we have entirely eliminated detemniation. This is the rationale of the "Sorites," which shows that any number of propositions may be strung together by taking the predicate of one proposition as the subject of the next. The ordinary syllogism is simply the union of two purely verbal propositions, and may be thus stated: a thing which, under one aspect, is called by a certain name, may also, under another aspect, be called by another name, and under a different aspect by a still different name; as, in the example given above, "gold," which is so called from connoting certain attributes, may also be called, when regarded as having fewer attributes, by the name "metal," and, as possessed of still fewer attributes, by the name "substance." Syllogistic logic, when thus reduced to its bare formalism, may well be regarded as admitting only of "trifling propositions." A like result is of course reached by an examination of the syllogism of extension. If the qualified predicates of the premises are really identical with their respective subjects, the quantified predicate of the conclusion will be identical with its own subject. Thus, stated tersely, our former example of the syllogism becomes,

Gold = the metal named gold = the substance named gold.*

Syllogistic logic is thus based upon a radical misconception of the relation of thought and knowledge. To assume that we already know is not to account for knowledge, and this is what the restricting of thought to an analysis of the meaning of names implies. The actual process of thinking is exactly the reverse of what formal logic supposes it to be. The completely qualified individual is the goal and not the starting-point of knowledge. Thinking is a gradual progress from the abstract to the concrete, and not the reverse, as Empiricism and common logic assume. It is true that of the absolutely abstract nothing can be said, as the absolutely concrete is the ideal mark toward which the individual thinker is continually pressing forward, but to which he never completely attains. The beginning of intelligent con-

* NOTE.—The validity of formal logic is ably discussed, from a different point of view, by Prof. Vera. Jour. Spec. Phil., Vol. VII., No. 3, p. 60 ff.

sciousness is the opposition of an object to self, as expressed in the formula: "something is present to me which I did not make for myself." Nothing less is involved in any theory which is to account for knowledge at all, and what it implies is that the mere individual, as out of relation to thought, is unknowable. From this minimum of relation, intelligence advances to new and wider relations, so that the most complete knowledge is also the most complex. Hence the substitution of a true conception of the universal for the false conception which identifies it with a class name. The universal is the sum of relations by which a thing is determined as real, the absolute universal the totality of relations of all things to each other. And, as things owe their relations to self-consciousness, from self-consciousness all reality proceeds and to it all must return. The conception of logic, as the science of thought, is thus thoroughly altered and simplified. The false antithesis of nature and thought, experience and reasoning, disappears when it is seen that nature or experience is constituted by relations to universal thought or reason. So, too, the hard opposition of "matter" and "form," "concrete" and "abstract," "connotative" and "non-connotative," breaks down upon a perception of their strict corelativity. Finally, to give one other instance, analysis and synthesis, deduction and induction, are transcended by a process, which at once differentiates and integrates, individualizes and universalizes.

And this leads us to consider the logical system that has grown out of the second form of Empiricism—the so-called Inductive Logic. A more thorough attempt to exclude relations of thought, leads the Empiricist, as we have seen, to maintain that knowledge begins with individual sensations, as representatives of single qualities of objects, and that thought consists in putting together the "simple ideas" thus given to it. Reality is now assumed to lie, not in the complex of qualities constituting a thing, but in these qualities taken separately. As, however, consciousness of the quality of a thing implies relation as much as consciousness of a number of qualities, Empiricism, striving to be consistent in excluding the activity of thought, finally seeks to derive knowledge from simple sensations or copies of sensation. But as no progress can be made from pure sensation to something other than itself, the reality or even the appearance of knowledge can be accounted for only by the reintroduction of that relation to self-consciousness which is ostensibly excluded; and

hence permanent, identical and mutually related things are quietly substituted for momentary and isolated sensations, under cover of habitual associations. Upon this compromise between a pure sensationalism and a thorough idealism the common theory of induction is founded. Were the Empiricist consistent in admitting nothing but feeling as it is to the individual, a science of nature, or even the fiction of such a science, would be inexplicable. Hence, while pretending to deny the originative activity of thought, he tacitly assumes that objects are independent of feeling, and thus brings back the relations he seems to exclude. As was to be expected from its genesis, the ordinary inductive logic is a mixture of truth and error. Unlike syllogistic logic, it correctly represents knowledge as gradually proceeding from the abstract to the concrete, the past to the future, the known to the unknown; but of the ultimate grounds upon which the validity of this process rests it can give no consistent account. That the canons of inductive logic are valid within the sphere of physical science, we have no wish to deny; the point at issue is whether the method which they formalize is justifiable, upon the assumption that all knowledge originates in feeling.

The foundation of induction are those uniformities or laws of nature which, on the Empirical "hypothesis" of their origin, we must suppose to be passively apprehended by experience. If there were no such laws, no general propositions in regard to nature would be possible. These uniformities are mainly reducible to the law of causation, which, upon the supposition that thought has no constructive power, is explained to be an observed uniformity of succession, not between things, but between feelings. There is no necessary connection of events, although there is a fixed order in their succession. Finding that such an order obtains in an indefinite number of observed instances, we generalize our experience, and conclude universally that nature as a whole is uniform. Expressed in terms of feeling, this theory must be interpreted to mean that certain sensations, from being habitually associated in the way of resemblance and of order in time and place, become inseparably associated in consciousness, and assume the appearance of self-identical objects, permanent and independent of consciousness; and that, certain groups of "permanent possibilities" being frequently associated in one definite order of succession, a new form of inseparable association is

created, which is naturally and inevitably confounded with a necessary connection in the sequence of things. The law of causation is thus a uniform, but by no means a necessary connection of associated feelings.

The most obvious reflection upon this theory is that it is a scepticism in disguise, as its parentage in Hume would lead us to expect. It is not, as it pretends to be, an account of the origin of real knowledge, but a disproof of the possibility of such knowledge. Nature is a "fortuitous concourse" of feelings that happen to follow in a fixed order, but which might have followed in any other order, or in no order at all. If knowledge is to be more than a name, the real world must be something that, in virtue of universal relations to thought, may be known by all intelligences; whereas the net result of this theory is that nothing can be known save the order of feelings as they are for the individual consciousness. But how can we call that knowledge, which is merely a succession of feelings as they happen to suggest each other to the individual? As there is no reason why they should not have come in a totally different order, any combination of feelings is equally entitled to the name. The Empiricist is of course ready with the reply that whether observed uniformities of feeling are entitled to be called knowledge, is merely a dispute about words, since to such uniformities the law of causation, upon which induction is based, is demonstrably reducible. Upon the possibility of reconciling this theory of causation with the procedure of the physical sciences, we are willing to rest the whole question.

Such expressions as "uniformity in the succession of phenomena," "fixed order in our sensations," "a constancy of antecedence and sequence," and the like, imply that it is by repeated associations of feelings in a definite order of succession that belief in the uniformity of nature is generated. Nor are these expressions merely an adaptation to the usages of popular language; they are essential to the plausible characterization of the law of causation, upon the denial of necessary connection between objects. But if repeated acts of association between feelings—we are not told how many—are required to create a uniformity among phenomena, it must be impossible to make a valid induction from a single instance. And yet one of the canons of inductive logic—the canon which admittedly formulizes the most perfect method of the sciences, the "method of

difference"—is based upon the principle that one properly conducted experiment is sufficient to give absolute certainty of a law of nature. "When a chemist," says Mr. Mill, "announces the existence and properties of a newly discovered substance, if we confide in his accuracy, we feel assured that the conclusion he has arrived at will hold universally, although the induction be founded on but a single instance." Here is a general law of nature, inferred without hesitation from a *single instance.* No words could more flatly contradict the account of causation as the product of an "order of succession" gradually generated by repeated associations of feelings. According to the one view, the belief in a uniformity of natural phenomena should be of various degrees of intensity, varying from the faintest possibility to absolute certainty; according to the other, it is as strong on the first instance as any number of instances could make it. It may be replied that, while frequent acts of association are needed to generate the conception of uniformity, that conception, once acquired, may be directly applied to any new instance. "Only the scientific man," it may be said," to whom nature is already a system of unvarying laws, could apply the 'method of difference;' the law of causation is itself an induction, being nothing more than a generalized statement of the observed fact that, so far as our knowledge has gone, there is no exception to uniformity of sequence in events." Now, that the principle of the uniformity of nature is not given to man in the form of a general proposition, but gradually discovered, is of course a mere truism. The question is, whether a regular succession of feelings, as they are to the individual, is sufficient to account for those special uniformities that are inferred from a single instance. Does not the very assertion that causality, as a general law, is but a summing up of special cases of causation, overthrow the derivation of these cases from an invariable order of succession between feelings? If a given instance of succession is not of itself sufficient to establish a causal relation, no reference to the general law of causation can be of any avail. The general law can only warn us that we may expect to find a fixed order of association between every group of possibilities of sensation, it cannot tell us between what groups the uniformity obtains. On the contrary it is claimed, and rightly claimed by Mr. Mill, that the general uniformity of nature, being related to particular uniformities, as the major proposition of a syllogism to the minor,

depends upon no exception being found in the case of special uniformities. Each instance of the law of causation must therefore be determined upon its own merits. Suppose, then, that "a chemist announces the existence and properties of a newly discovered substance," i. e., the association for the first time of certain possibilities of sensation hitherto unassociated; have we any right to "feel assured that the conclusion he has arrived at will hold universally, although the induction be founded on but a single instance?" Assuredly not, if we are to be consistent in deriving every case of causation from a uniform association of feelings. There is no possible meaning in calling that order of succession "uniform," which has occurred only once. But if the connection of feelings is not uniform, it is indistinguishable from associations of feelings, that are notoriously but the play of fancy or the sport of arbitrary suggestion. Once again we find that, by persistently following out Empiricism to its logical consequences, not merely all actual, but even all apparent, distinction between reality and fiction is obliterated. The force of this criticism cannot be destroyed by any change in the form of the theory, so long as the passivity of thought, and the consequent reduction of facts to feelings, is maintained. If thought has nothing to do with the constitution of experience, the relation of cause and effect can only be explained as a sequence of feelings as they are felt by the individual; and if the legitimacy of scientific method is to be even plausibly established, that sequence must be declared to be a uniform one. Only one of two alternatives remains: either to preserve the possibility of science by giving up the derivation of nature from associated feelings, or to hold by the Empirical explanation of knowledge at the expense of denying the validity of scientific procedure. The necessity of accepting the former alternative will be made more apparent by pointing out the relations of thought that are covertly introduced when the law of causation is ostensibly reduced to a uniform succession of feelings.

Our criticism has hitherto proceeded upon the assumption that invariability in the sequence of feelings does not involve more than can be correctly referred to the origin of feeling. We have now to enquire whether even the fiction of a necessary connection between phenomena, which is not denied to exist, can be accounted for upon the principles of Empiricism. In our translation of the law of causation into terms of sensation, it

appeared that belief in the uniform sequence of phenomena involves the presupposition that individual feelings have, by frequent association, assumed the appearance of permanent objects; which, however, can only be correctly defined as "permanent possibilities of sensation." To this it is added that, upon the occasion of an actual sensation being felt, a "countless variety of possibilities of sensation" are instantaneously and unconsciously suggested; which manifestly assumes that the feelings thus suggested are recognized as *identical* with those formerly experienced, for otherwise they would want the characteristic which distinguishes them from the contingent sensation accompanying them. No doubt the theory does not contemplate an identity such as is implied in the continuous existence of an objective thing, but only the repetition of feelings, identical in determination, although not numerically the same, with feelings formerly felt, either under the same or under similar conditions; but at least the belief in "something which," in Mr. Mill's language, "is fixed and the same, while our impressions vary," has to be accounted for. Now, no two feelings can be exactly identical; the sensation I felt a moment ago is different from the sensation I now feel, if for no other reason than that it exists in a different instant of time. And what is true of my actual impressions is equally true of my impressions as reproduced, which, as Hume has shown once for all, only differ in vivacity; no feeling can be repeated, and therefore no feeling can be identical with itself. But "permanent possibilities of sensation" are simply suggested feelings, and therefore cannot be self-identical. The group of sensations, "that I might possibly feel under certain conditions," and which an impression calls up by association, may resemble feelings I have formerly experienced, but they are not identical with them. Uniformity of sequence between feelings, therefore, does not mean, as at first seemed to be the case, a fixed order of succession between the same feelings, but only a regular consecution of similar feelings; and by the law of causation must be understood a uniformity of association between feelings that are like, but not identical. It is assumed, however, that, while no two feelings can be identical, the order of succession between them is unvarying; otherwise the law of causation, as a fixed order in the connection of antecedent and consequent, would vanish entirely, and with it the possibility of a science of nature. But such a uniformity involves the concep-

tion of identity as much as the belief in the permanent existence of things, which it is brought forward to explain. The feelings vary, the relation between them remains the same. Undoubtedly: but this is just to reinstate that originative activity of thought which Empiricism exists to deny. The identity of objects, which was to be explained away, is secretly brought back under the disguise of a uniform succession of feelings. No sooner do we oppose uniformity to change than we reintroduce the whole sum of relations by which the world is constituted. There is no difficulty in plausibly resolving the laws of nature into a uniformity in the succession of feeling, because such a uniformity involves identity; identity implies the permanence of objects; and permanent objects are necessarily related, in so far as they succeed each other as cause and effect. A uniform sequence of feelings implies the relation of feelings to a consciousness that not only feels but thinks—i. e., which prevents sensations from vanishing by bringing them into permanent relations with each other—and therefore that "necessary connection" in the way of causality which is synonymous with the exercise of thought. An attempt will hardly be made to obviate this conclusion by saying that the uniformity spoken of does not imply identity, but only similarity, of succession. Without laboring to extract meaning from the meaningless statement that the law of causation is a similar succession of similar feelings, it is sufficient to say that a similar, not less than an absolute uniformity, involves the conception of identity. Things are only similar in so far as they are both like and unlike, and to judge of their likeness involves an act of comparison and identification, which we have already seen to be beyond the reach of mere sensation. Thus we have successively seen that the Empiricist cannot account for the belief in a necessary connection of events or in the permanence and identity of objects; nor for his assumption of a uniform order of identical feelings or of similar feelings; nor for similarity in the sequence of similar feelings; nor, we may add, for a sequence of feelings, neither similar nor identical, i. e., for succession in time. In its attempt to explain away the necessary connection or permanent relations of things, Empiricism only succeeds in explaining itself away, and thus in unwittingly establishing the originative activity of self-consciousness.